By the foregoing Amendment, claim 1 is amended. Claims 7-26 are cancelled without prejudice or disclaimer. New claims 27-37 are added. The correspondence between the present pending claims and the claims of the parent application are as follows:

Present claim no(s).	**Parent claim no(s).**
1-6	1-6
27	27
28	39 (with amendments)
29	40
30	42
31	44
32	45
33	46
34	47
35	48
36	49
37	50

Attached hereto is listing of the status of all patent claims and all added claims and an explanation of the support in the disclosure of the patent for the changes made to the claims. The attached page is titled "STATUS OF CLAIMS AND SUPPORT FOR CHANGES."

Claim 1 has been amended to recite the limitations that the steel is a bearing steel and that the amount of the residual austenite is at a radial depth of 0.1 mm from the raceway of the ring, in order to clearly distinguish the present invention over Tsushima and Yajima, which were applied in

rejecting the claims of the parent application. The same limitations are recited in new claim 28, and reflect additions to the subject matter of claim 39 of the parent application.

These changes are believed not to introduce new matter, and entry of the Amendment is respectfully requested.

Based on the above Amendment and the following Remarks, Applicant respectfully requests that the Examiner reconsider all rejections that were outstanding in the parent application, and withdraw them.

Rejections under 35 U.S.C. § 103

1. Rejection based on Okamoto et al., Tsushima, and Komurasaki

In paragraph 6 of the final Office Action in the parent application, claims 1, 3, 4, 6, 27, 44, 46, 47, 49, and 50 (corresponding to present claims 1, 3, 4, 6, 27, 31, 33, 34, 36, and 37) were rejected under section 103(a) as being unpatentable over Okamoto et al. and Tsushima in view of Komurasaki. It is respectfully submitted that the subject matter of present claims 1, 3, 4, 6, 27, 31, 33, 34, 36, and 37 are patentable over Okamoto et al. and Tsushima in view of Komurasaki.

Okamoto is nothing more than a discussion of the effect of Si and retained austenite on the rolling fatigue life of 1% C - 1.5% Cr bearing steel, and more specifically, on the rolling fatigue life of ball bearing balls formed of 1% C - 1.5% Cr bearing steel. The retained austenite content in the tested specimens varies from 3.4% to 26.6%. As described on page 16, Okamoto concludes that fatigue life was shortest when the retained austenite content was 3.4%, and that generally, life was longer as the quantity of retained austenite *increased*. On page 17, Okamoto concludes that fatigue

life was longer as the quantity of retained austenite *increased*, and that *the life of specimens containing 21.9% and of specimens containing 26.6% retained austenite was significantly longer.*

In the final Office Action in the parent application, it was acknowledged that "Okamoto does not specifically teach the use of the steel in the fixed ring of ball bearings or the fatigue life being improved in the raceway." Tsushima was cited as teaching "an oil lubricated, roller bearing with steel rings having residual austenite."

The Tsushima patent discloses a bearing comprising bearing rings 11, 12 and tapered rolling elements 13 interposed between the rings 11, 12. The bearing rings 11, 12 and the rolling elements are made of carburized steel, wherein the carburization provides a surface hardened layer 14. The Tsushima patent does not teach making the rings 11, 12 of a bearing steel, or more specifically, a bearing steel containing up to about 10% of residual austenite, or even more specifically, a bearing steel containing up to about 10% of residual austenite at a radial depth of 0.1 mm from the raceway of the ring, as recited in amended claim 1 and new claim 28. In fact, the Tsushima patent does not disclose any particular amount of residual austenite, much less a particular amount at a particular radial depth. The Tsushima patent merely states (col. 3, lines 10-16):

> In the present invention, a deep hardened layer is provided on the surfaces of the bearing rings and the rolling elements by carburization, and a hardness as high as 48 to 58 HRC is given to the core. As a result, the amount of retained austenite in the surface hardened layer is about the same as in a conventional carburization whereas the compressive residual stress decreases.

The Tsushima patent does not provide any figures for the amount of retained austenite in the surface hardened layer in a conventional carburization.

The Tsushima article, which discusses the same test results as the Tsushima patent, discloses amounts of retained austenite ranging from 15% to 33% (see Figure 1), well above the range recited in the present independent claims; and does not provide any teaching regarding the amount of residual austenite at any particular radial depth.

It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. *In re Gorman*, 933 F.2d 982, 987, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). The Federal Circuit has repeatedly stated that it is impermissible to use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. *In re Fritch*, 23 USPQ2d 1780, 1783-84 (Fed. Cir. 1992); *In re Fine*, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988). Rather, a prior patent must be considered in its entirety, i.e., as a whole, including portions that would lead away from the invention, *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 220 USPQ 303, 311 (Fed. Cir. 1983).

Given the Federal Circuit's injunction against "picking and choosing among isolated disclosures" and its mandate that each reference be considered in its entirety, the Tsushima patent cannot be said merely to teach "an oil lubricated, roller bearing with steel rings having residual austenite," as proposed in the Office Action. Considering the Tsushima patent together with the Tsushima article (which quantifies the Tsushima patent's unquantified amount of retained austenite in the surface hardened layer in a conventional carburization), they teach a deep hardened layer provided on the surfaces of the bearing rings and the rolling elements by carburization, wherein the surface hardened layer has an amount of residual austenite in the range of 15% to 33%.

Combining Tsushima's teaching with Okamoto's teaching (that fatigue life is shortest when the retained austenite content was 3.4%, that generally, fatigue life is longer as the quantity of retained austenite is *increased*, and that *the life of specimens containing 21.9% and of specimens containing 26.6% retained austenite is significantly longer*), one would at best arrive at a bearing in which the ball bearings have a retained austenite content in a range of 5.3% to 26.6% (as taught by Okamoto) and the rings have a retained austenite content in a range of 15% to 33% (as taught by Tsushima) at an unspecified radial depth. Thus, there is no teaching of the limitation of claims 1 and 31 that the fixed ring comprises a bearing steel containing up to about 10% of residual austenite at a radial depth of 0.1 mm from the raceway of the ring.

With respect to claim 31, which recites that the alternator is to be used in an environment in which a maximum speed of rotation is in excess of 12000 r.p.m., it is noted that such an alternator represents the severest environment for antifriction bearings supporting rotating parts. Based on Okamoto's teachings, it would be unthinkable in such a severe environment to employ a bearing having a residual austenite content as low as up to 10%, because Okamoto concludes that a bearing with such a low residual austenite content has a relatively short life.

Komurasaki was cited as teaching the various elements of a fixed housing and rotating shafts with a pulley supported by ball bearings in the environment of an alternator, and does not remedy the deficiencies of Okamoto and Tsushima with respect to the composition of the fixed ring.

2. Rejection based on Okamoto et al., Tsushima, Komurasaki, and Yajima et al.

In paragraph 7 of the final Office Action in the parent application, claims 2 and 45 (corresponding to present claims 2 and 32) were rejected under section 103(a) as being unpatentable over Okamoto et al., Tsushima, and Komurasaki, further in view of Yajima et al. It is respectfully submitted that the subject matter of present claims 2 and 32 are patentable over Okamoto et al., Tsushima, and Komurasaki, further in view of Yajima et al.

In the final Office Action in the parent application, Yajima was cited as teaching "that it is known to provide subzero treatment followed by tempering to reduce the resudual austenite and release internal stress." Assuming for the sake of argument that this is correct, Yajima (like Komurasaki) does not remedy the deficiencies of Okamoto and Tsushima with respect to the composition of the fixed ring.

Further, Yajima teaches that the greater the amount of retained austenite, the longer the life of the bearing. It would be unthinkable to one skilled in the art to use a bearing having a decreased amount of retained austenite-- which is taught by Yajima to result in a decreased bearing life--in an alternator, which is known to have a severe environment requiring an increased bearing life.

3. Rejection based on Okamoto et al., Tsushima, Komurasaki, and Stickels et al.

In paragraph 8 of the final Office Action in the parent application, claims 5, 39, 42, and 48 (corresponding to present claims 5, 28, 30, and 35) were rejected under section 103(a) as being unpatentable over Okamoto et al., Tsushima, and Komurasaki, further in view of Stickels et al.*

* Claim 41 also was included in this rejection. The inclusion of claim 41 is assumed to be an error, inasmuch as claim claim 41 was stated to contain allowable subject matter in paragraph

Claim 5 has been canceled. It is respectfully submitted that the subject matter of remaining present claims 28, 30, and 35 is patentable over Okamoto et al., Tsushima, and Komurasaki, further in view of Stickels et al.

In the final Office Action in the parent application, Stickels et al. was cited as teaching "steel used in bearing [*sic*] which is carburized and tempered between 100-300 degrees and contains as little as 3% residual austenite." However, Stickels teaches that it is in the interior that the amount of retained austenite is up to 3%, and that at the surface layer, the amount of retained austenite is 14%. Moreover, Stickels discloses that the higher amount, surface-retained austenite is better for lengthening bearing life. "[I]t is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." *In re Wesslau*, 353 F.2d 238, 147 USPQ 391 (CCPA 1965). Thus, Stickels would suggest to one of ordinary skill in the art that to provide an alternator having bearings with increased bearing life, at least the surface layer of the bearings should contain 14% retained austenite, which is contrary to the requirement of claim 28 that the fixed ring comprise a bearing steel containing up to about 3% of residual austenite at a radial depth of 0.1 mm from the raceway of the ring.

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10 of the final Office Action in the parent application.

Request to Verify Change of Address

A "Notice of Change of Address" has been filed in this application to direct the PTO to send correspondence to the correspondence address associated with Customer No. 000,136, which is the address set forth in the signature block below. If the Notice has not been matched with the PTO's application file, the Examiner is requested to call the undersigned counsel so that another copy can be provided. If the Notice has been matched with the PTO file, it is requested that the Examiner verify that the information has been entered into the PTO mailing system so that future communications will be mailed to the correct address.

Conclusion

All rejections that were outstanding in the final Office Action in the parent application have been complied with, properly traversed, or rendered moot. Thus, it now appears that the application is in condition for allowance. Should any questions arise, the Examiner is invited to call the undersigned representative so that this case may receive an early Notice of Allowance.

Favorable consideration and allowance are earnestly solicited.

Respectfully submitted,

JACOBSON HOLMAN, PLLC

Date: 21 Nov 01

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STATUS OF CLAIMS AND SUPPORT FOR CHANGES

Status of claims

Patent claim number(s)	*Status*
1-4, 6	Pending
5	Canceled

Added claim number(s)	*Status*
7-26	Canceled
27-37	Pending

Support for changes

Claim(s)	*Change*	*Support*
1	In line 3, substitution of --rotatably-- for "rotably"	Correction of spelling error
1	In line 3, insertion of --ball-- before "bearings"	Col. 5, lines 42-44
1	In lines 5-6, insertion of --the fixed ring having a raceway," after --frame,--	Col. 5, lines 65-68
1	In line 7, after "austenite" insertion of --whereby the rolling fatigue life is improved by preventing occurrence of partial structural changes or minute cracks immediately under the raceway of the fixed ring caused by vibration or impact--	Col. 1, lines 37-55; col. 2, line 47 -col. 3, line 2

Claim(s)	*Change*	*Support*
27	An alternator as defined in claim 1 wherein the amount of residual austenite is up to about 8%	Col. 6, Table I, Example 2
28	An alternator for vehicles comprising a rotary shaft of a rotor which is rotatably supported by a pair of ball bearings	Original claim 1 Correction of spelling of "rotatably" Col. 5, lines 42-44 (addition of --ball-- before "bearings" in language of original claim 1)
28	each comprising a fixed ring and a rotary ring	Original claim 1
28	on a frame having a stator	Original claim 1
28	and a drive pulley which is mounted on one end of the rotary shaft projecting outward from the frame	Original claim 1
28	the fixed ring having a raceway	Col. 5, lines 65-68
28	wherein the alternator comprises at least the bearing directed toward the pulley comprising a fixed ring comprising	Original claim 1
28	a bearing steel	Col. 5, lines 55-61
28	containing up to about 3% of residual austenite	Col. 6, Table 1, Example 1 and col. 9, Table 4, Example 5
28	at a radial depth of 0.1 mm from the raceway of the ring	Col. 5, lines 65-68
28	whereby the rolling fatigue life is improved by preventing occurrence of partial structural changes or minute cracks immediately under the raceway of the fixed ring caused by vibration or impact	Col. 1, lines 37-55; col. 2, line 47 -col. 3, line 2

Claim(s)	*Change*	*Support*
29	An alternator as defined in claim 28 wherein said steel containing limited proportion of austenite has been made by subjecting steel having a higher austenite content to a sub-zero treatment	Original claim 2
30	An alternator as defined in claim 28 wherein said steel containing limited proportion of austenite has been made by subjecting steel having a higher austenite content to a sub-zero treatment and a subsequent tempering treatment at a temperature of 170° to 230° C	Original claim 4
31	An alternator for vehicles	Original claim 1
31	for use in an environment in which a maximum speed of rotation is in excess of 12000 r.p.m., comprising	
31	a rotary shaft of a rotor which is rotatably supported by a pair of ball bearings	Original claim 1 Correction of spelling of "rotatably" Col. 5, lines 42-44 (addition of --ball-- before "bearings" in language of original claim 1)
31	each comprising a fixed ring and a rotary ring	Original claim 1
31	on a frame having a stator	Original claim 1
31	and a drive pulley which is mounted on one end of the rotary shaft projecting outward from the frame	Original claim 1
31	the fixed ring having a raceway	Col. 5, lines 65-68
31	wherein the alternator comprises at least the bearing directed toward the pulley comprising a fixed ring comprising	Original claim 1
31	a steel containing up to about 10% of residual austenite	Original claim 1

Claim(s)	*Change*	*Support*
31	whereby the rolling fatigue life is improved by preventing occurrence of partial structural changes or minute cracks immediately under the raceway of the fixed ring caused by vibration or impact	Col. 1, lines 37-55; col. 2, line 47 -col. 3, line 2
32	An alternator as defined in claim 31 wherein said steel containing limited proportion of austenite has been made by subjecting steel having a higher austenite content to a sub-zero treatment	Original claim 2
33	An alternator as defined in claim 31 wherein said steel containing limited proportion of austenite has been made by subjecting steel having a higher austenite content to tempering at a temperature of 250° to 380° C	Original claim 3
34	An alternator as defined in claim 31 wherein said steel containing limited proportion of austenite has been made by subjecting steel having a higher austenite content to a sub-zero treatment and a subsequent tempering treatment at a temperature of 170° to 230° C	Original claim 4
35	An alternator as defined in claim 31 wherein said steel has been subjected to carburization hardening	Original claim 5
36	An alternator as defined in claim 31 wherein the amount of residual austenite is up to 6%	Original claim 6
37	An alternator as defined in claim 31 wherein the amount of residual austenite is up to about 8%	Col. 6, Table I, Example 2